26. The spin cytometer of claim 10, further comprising an additional one (1) or more light sources, each light source adapted to illuminate at least a portion of the transparent cylinder.

REMARKS

This paper is intended to be a complete response to the above-identified Office Action. It is believed no fee is due. If fees are required, however, the Commissioner is authorized to deduct the necessary charges from Deposit Account 501927/010-US-002.

Claims 1, 10, 19, 23 and 26 have been amended. Accordingly, claims 1-4, 10-31, 33 and 34 are currently pending in the instant patent application.

Section 112, Paragraph 2, Rejections

The Examiner has rejected claims 1-4, 10-31, 33 and 34 under 35 U.S.C. 112, second paragraph, as allegedly failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Specifically:

> The Examiner asserts that use of the term "adapted" renders the claims 1, 2, 10-13, 23, 26 and 27 indefinite because it is unclear how the [light source, detector, bar code, rotating means, cap and light emitting diode] has been modified, i.e. adapted, so as to be able to [illuminate, detect, be interrogated, rotate, seal the open end, and to emit a light having a wavelength]. (Office Action at pages 3-4.)
>
> The Examiner asserts that claims 3 and 4 are indefinite because it is unclear what structural and functional cooperative relationship exists between the 'calibration standards' and the 'photoactivated crosslinker.' (Office Action at page 3.)
>
> use of the term "adapted" renders the claims 1, 2, 10-13, 23, 26 and 27 indefinite because it is unclear how the [light source, detector, bar code, rotating means, cap and light emitting diode] has been modified, i.e. adapted, so as to be able to [illuminate, detect, be interrogated, rotate, seal the open end, and to emit a light having a wavelength]. (Office Action at pages 3-4.)

> The Examiner asserts that claim 10 is indefinite in reciting cytometric characteristic of a sample' because it is unclear what is encompassed by such a recitation. (Office Action at page 4.)
>
> The Examiner asserts that claim 11 is further indefinite because it is further unclear how the transparent cylinder can be sequentially rotated in two directions. (Office Action at page 4.)
>
> The Examiner asserts that claims 19 and 23 are indefinite for use of the term "approximately" with respect to recited wavelengths. (Office Action at page 4.)
>
> The Examiner asserts that claim 25 lacks antecedent basis for the phrase an analog to digital converter. (Office Action at page 5.)
>
> The Examiner asserts that claim 26 further lacks antecedent basis for the phrase a transparent cylinder. (Office Action at page 5.)
>
> The Examiner asserts that claim 31 is indefinite in reciting 'each detector responsive to a light signal because it is unclear what is encompassed by the term responsive. (Office Action at page 5.)

In general, it appears that the Examiner has confused the purpose of the claims with the purpose of the specification. It is long established that the purpose of a claim is to define the invention, not to explain it. *See Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1575-76 (Fed. Cir. 1986) (a claim need not "describe" the invention, such description being the role of the disclosure). Similarly, that a claim provides no "support in terms of structure" of the recited apparatus is irrelevant to the determination of patentability. *See, e.g., Carl Zeiss Stiftung v. Renishaw plc*, 945 F.2d 1173, 1180-82 (Fed. Cir. 1991) (reversing trial court holding of invalidity for failure to describe operable device); *W.L. Gore & Assocs. Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1556-58 (Fed. Cir. 1983) (noting that definiteness in claims and enabling support are distinct requirements), *cert. denied*, 469 U.S. 851 (1984). Thus, claims exist to define the invention while it is the function of the specification to provide the necessary support for the claims. 35 U.S.C. § 112 ¶ 1. As for the level of specificity required of the claims to meet the requirements of section 112, if "the claims, read in the light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention ... the courts can demand no more." *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d

613, 624 (Fed. Cir.), *cert dismissed*, 474 U.S. 976 (1985); MPEP § 706.03(d). That is, a claim is distinct if those of ordinary skill in the art understand its meaning. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987). Finally, it is noted that the Patent Act only requires reasonable precision in delineating the bounds of the claimed invention. *United States v. Telectronics, Inc.*, 857 F.2d 778, 786 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989).

With respect to the Examiner's rejection of claims 1, 2, 10-13, 23, 26 and 27 based on use of the term "adapted," Applicant asserts that *in light of the specification* it would be obvious to any person with even a passing knowledge of cytometric principles that:

- ✓ a light source is adapted to illuminate (several embodiments of how a light source is "adapted to illuminate" are described within the specification, for example: page 3, lines 20-28; Example 1 at page 5, line 23 to page 6, line 2; Example 3 at page 6, lines 15-18; Example 6 at page 7, lines 12-15; Example 11 at page 8, line 20 to page 9, line 9; Example 15 at page 10, line 25 to page 6, line 20; and Figure 1 at elements 9 and 10);
- ✓ a detector is adapted to detect (several embodiments using different types of detectors are described within the specification, for example: page 3, lines 20-28; Example 4 at page 6, lines 19-25; Example 5 at page 6, lines 27-30; Example 8 at page 7, lines 17-22; Example 9 at page 7, line 24 to page 8, line 6; Example 11 at page 8, line 20 to page 9, line 9; Example 15 at page 10, line 25 to page 11, line 20; and Figure 1 at elements 8 and 10);
- ✓ a bar code label is adapted to be interrogated (several embodiments discussing the use of bar code labels are described within the specification, for example, Example 7 at page 7, lines 11-15);
- ✓ a rotating means is adapted to rotate (several embodiments discussing the use of bar code labels are described within the specification, for example: page 3, lines 3-19 and lines 21-28; Example 1 at page 5, lines 22-25; Example 8 at page 7, lines 17-22; Example 9 at page 7, lines 24-28; Example 12 at page 9, line 11 to page

10, line 8; Example 13 at page 10, lines 10-17; Example 18 at page 12, lines 14-24; and Figure 1 at elements 4 and 5);

- ✓ a cap, by definition, is adapted to seal the open end (several embodiments discussing the use of bar code labels are described within the specification, for example: page 2, lines 9-21; Example 1 at page 5, lines 22-25; and Figure 1 at element 1); and
- ✓ a light emitting diode is, by definition, adapted to emit (several embodiments discussing the use of bar code labels are described within the specification, for example: page 5, lines 10-12; Example 11 at page 8, line 20 to page 9, line 9; Example 15 at page 11, lines 1-4; and Figure 1 at element 9).

In light of Applicant's specification and established case law, it is respectfully submitted that Applicant's use of the term "adapted" would be clear to those of ordinary skill in the art having the benefit of Applicant's specification and, as such, define the claimed invention in distinct and clear enough terms to meet the requirements of 35 U.S.C. 112, second paragraph. Accordingly, it is respectfully requested that the Examiner withdraw her rejections based on this ground and allow the pending claims to issue.

With respect to the Examiner's rejection of claims 3 and 4, Applicant does not understand the rejection. Claim 3 clearly recites a "transparent cylinder [having] an inner wall having calibration standards affixed thereon" and claim 4 clearly recites "a photoactivated crosslinker affixed thereon" as well. The "functional connectivity" is explicit: both the calibration standards and photoactivated crosslinker are attached to the inner surface of the transparent cylinder. This is all that is required of an apparatus claim -- it does not need to define how the calibration standards and cross linker 'cooperate' as that is the function of the specification (see comments above). With respect to the specification, it clearly teaches the function of the calibration standards and photoactivated crosslinkers. For example, see the specification at page 4, lines 1-11 and Example 2 at page 6, lines 4-12. Accordingly, it is respectfully requested that the

Examiner withdraw her rejections based on this ground and allow the pending claims to issue.

With respect to the Examiner's rejection of independent claim 10 based on use of the term "cytometric characteristic of a sample," Applicant asserts that this phrase has an accepted meaning within the field of cytometry and would be well-known to any practitioner of ordinary skill. By way of example only, the International Society for Analytical Cytology describes cytometry in the following manner:

> The scope of Cytometry embraces all aspects of analytical cytology, which is defined broadly as characterization and measurement of cells and cellular constituents for biological, diagnostic, and therapeutic purposes. It includes components of cytochemistry, cytophysics, cell biology, molecular biology, physiology, pathology, image analysis, statistics, instrumentation, clinical laboratory practice, and other relevant subjects. (Definition obtained from *Cytometry* web site - http://www.interscience.wiley.com/jpages/0196-4763/aims.html. *Cytometry* is the official journal of the International Society for Analytical Cytology.)

Similarly, the Clinical Flow Cytometry Society defines cytometry in the following manner:

> Cytometry is the measurement (-metry) of cells (cyto-) by an analytical device (cytometer) using lasers and light detectors to determine characteristics of the cells. A flow cytometer measures these cellular properties by running the cells, suspended in a liquid, through a laser beam and the light is detected by diodes and photomultiplier tubes. An image cytometer measures the cells on a slide by shining a laser on the cells and detecting the light by photomultiplier tubes. The cellular characteristics that can be detected by a cytometer include; relative size, granularity, and the presence or absence of biochemical structures inside and on the surface of the cells. These biochemical structures can be used to identify the types of cells being detected by the cytometer and whether these cells have certain functions or whether the cells are active, resting, dying or dead. (See http://www.cytometry.org/intro.htm.)

In light of Applicant's specification (see, e.g., Examples 12-18 at pages 9-12 of the specification) and the general definitions of cytometry as evidenced above, it is respectfully submitted that Applicant's use of the term "cytometric characteristic" would be clear to those of ordinary skill in the art having the benefit of Applicant's specification and, as such, define the claimed invention in distinct and clear enough terms to meet the requirements of 35 U.S.C. 112, second paragraph. Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

With respect to the Examiner's rejection of claim 11 based on use of the term "sequentially rotated in two directions," Applicant does not comprehend the Examiner's basis for rejection. In its ordinary meaning, 'sequential' means "of, relating to, or arranged in a sequence: serial" and "following in sequence." (Merriam-Webster's Collegiate Dictionary on-line at http://www.m-w.com/home.htm.) Thus, the plain and ordinary meaning of the phrase "sequentially rotated in two directions" means rotated in a first direction and then in a second direction. One reason for doing this is to agitate the measured sample. See, for example, the specification Examples 13 and 14 at page 10, lines 10-23. Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

With respect to the Examiner's rejection of claims 19 and 23 based on use of the term "approximately" to describe light source (e.g., laser) wavelengths, Applicant asserts that this phrase would be understood by those of ordinary skill in the field of cytometry. By way of example only, the specification identifies a non-exhaustive list of possible light sources as including: "ultraviolet LEDs, visible LEDs, infrared LEDs, ultraviolet diode lasers, visible diode lasers, infrared diode lasers, gas lasers, incandescent sources, and the like." In the specification see Example 15 at page 11, lines 1-5. It is well-known in the field of cytometry that each of these sources have relatively well-defined wavelengths. For example, an *introductory* text on flow cytometry identifies wavelengths associated with various 'colors' of the electromagnetic

spectrum as shown below in Table 1. The same text identifies illustrative wavelengths associated with various laser (light source) types, shown below in Table 2.

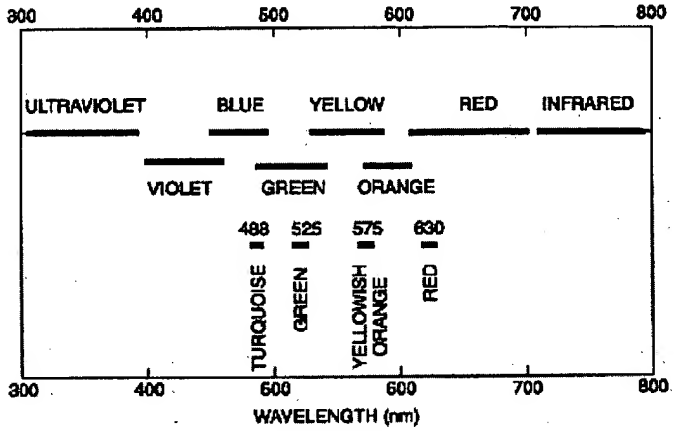

Table 1. Wavelengths Associated with Various Light Frequencies ("Flow Cytometry First Principles," second edition by Alice Longobardi Givan, Wiley-Liss Publishers, 2001, page 61)

Laser type	Wavelengths (nm)	Possible fluorochromes
Argon ion	488	Fluorescein, R-phycoerythrin, PerCP, PE-tandems, EGFP, EYFP, propidium iodide, Alexa 488, acridine orange
	514	Rhodamine, propidium iodide, EYFP, R-phycoerythrin
	Ultraviolet (351/364)	Hoechst dyes, DAPI, Indo-1, AMCA, Cascade Blue, EBFP
Helium-neon (HeNe)	Usually 633	Allophycocyanin, Cy5, TO-PRO-3
Krypton ion	568	Cy3, Texas Red, Alexa 568
	647	Allophycocyanin, Cy5, TOPRO-3
Red diode	635	Allophycocyanin, Cy5, TOPRO-3
Helium-cadmium (HeCd)	325	Indo-1, propidium iodide
	442	Mithramycin, chromomycin A3, ECFP

Table 2. Wavelengths Associated with Various Light Sources ("Flow Cytometry First Principles," second edition by Alice Longobardi Givan, Wiley-Liss Publishers, 2001, page 64)

In light of the above comments, it is respectfully submitted that Applicant's use of the term "approximately" would be clear to those of ordinary skill in the art having the benefit of Applicant's specification and, as such, define the claimed invention in

distinct and clear enough terms to meet the requirements of 35 U.S.C. 112, second paragraph. Accordingly, it is respectfully requested that the Examiner withdraw her rejections based on this ground and allow the pending claims to issue.

With respect to the Examiner's rejection of claim 25 for failing to provide an antecedent basis for the phrase "an analog to digital converter," Applicant believes the Examiner is mistaken. Specifically, dependent claim 25 defines a detector means comprising an analog to digital converter. There is no antecedent basis for this term because it is defined in this claim. Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

With respect to the Examiner's rejection of claim 26 for failing to provide an antecedent basis for the phrase "a transparent cylinder," Applicant has amended claim 26 to make it clear that the transparent cylinder therein recited is that transparent cylinder defined in claim 26's parent claim (independent claim 10). Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

In light of Applicant's specification, it is respectfully submitted that Applicant's use of the term "responsive" would be clear to those of ordinary skill in the art and, as such, define the claimed invention in distinct and clear enough terms to meet the requirements of 35 U.S.C. 112, second paragraph. Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

Section 112, Paragraph 1, Rejections

The Examiner has rejected claims 11, 12, 17, 19 and 23 under 35 U.S.C. 112, first paragraph, as allegedly failing to be supported by the specification. Specifically:

> The Examiner alleges that that the specification does not provide support for "rotating means adapted to sequentially rotate the transparent cylinder in two directions" and "rotating means is adapted to rotate the transparent cylinder

between approximately 50-3000 revolutions per minute". Further, there is no literal or descriptive support describing the ranges set forth in claims 19 and 23, i.e. "photoreceptor material is activated by a wavelength of approximately 300 nm to approximately 100 nm (Office Action at pages 5-6.)

With respect to the Examiner's rejection based on "rotating means adapted to sequentially rotate the transparent cylinder in two directions," Applicant respectfully submits that the Examiner is mistaken. In the specification see, for example, X Examples 13 and 14 at page 10, lines 10-23. (See also Applicant's discussion above regarding this issue in the "Section 112, Paragraph 1, Rejections" portion of this Reply.) In light of this teaching, it is respectfully submitted that Applicant's use of this phrase is more than adequately supported by the specification as filed and, as such, meet the requirements of 35 U.S.C. 112, first paragraph. Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claims to issue.

With respect to the Examiner's rejection based on the specification's failure to teach a "rotating means [] adapted to rotate ... between approximately 50-3000 revolutions per minute," Applicant submits that it would be obvious to one of ordinary skill in the field of cytometric device design to know that the recited ranges are consistent with the disclosed invention. For example, an illustrative cylinder having a 1.3" inner diameter (see Example 1 at page 5, lines 22-25) can analyze approximately 20,000 eukaryote cells per revolution given an average eukaryote cell diameter of 5 microns (see Example 12 at page 9, line 11 to page 10, line 8 and Example 13 at page 10, lines 10-17 and Example 14 at page 10, lines 19-23). That is, 20,000 cells can be aligned end-to-end along a line that is $\pi \times 1.3$" long - approximately 10 cm (where 1.3π represents the circumference of a cylinder 1.3 inches in diameter) Thus, to obtain a cell analysis rate of 1,000,000 cells-per-second (see specification at page 4, lines 15-19), a revolution rate of 3000 RPM (or 50 revolutions per second) is needed. With respect to the lower rotational limit, Applicant submits it would be obvious to one of ordinary skill having the benefit of his disclosure that cell may be rotated as slow as one wants but

not so slow that the centrifugal force fails to keep the cells on the wall of the transparent cylinder (see specification, for example, at page 1, lines 7-10 and page 2, lines 9-21 and page 3, lines 13-16 and page 9, lines 18-27 and page 11, lines 7-9). Fifty (50) revolutions was chosen by the Applicant as a reasonable number and one that would be easily determined by one of ordinary skill in the art given the benefit of the Applicant's disclosure. Accordingly, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claims to issue.

With respect to the Examiner's rejection of the wavelength range recited in dependent claim 23, claim 23 has been amended to conform to the wavelength ranges explicitly identified within the specification. For example, at page 11, lines 1-5 of the specification Applicant provides an illustrative list of light sources that include "ultraviolet LEDs, visible LEDs, infrared LEDs, ultraviolet diode lasers, visible diode lasers, infrared diode lasers, gas lasers, incandescent sources, and the like." It is well-known in the field of cytometry that each of these sources have relatively well-defined wavelengths. Such wavelengths identified above in Table 1. In light of this amendment, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

With respect to the Examiner's rejection of the wavelength range recited in dependent claim 19, claim 19 has been amended to conform to the wavelength ranges identified above with respect to light sources so as to make the present application consistent as to excitation and response wavelengths. In light of this amendment, it is respectfully requested that the Examiner withdraw her rejection based on this ground and allow the pending claim to issue.

Section 103 Rejections

The Examiner has rejected claims 1-4, 10-18, 22, 24-31, 33 and 34 as allegedly being unpatentable under 35 U.S.C. 103(a) over U.S. Patent 5,639,428 to Cottingham (hereinafter Cottingham) in view of U.S. Patent 6,135,940 to Walters (hereinafter Walters). Specifically, the Examiner asserts that:

> Cottingham discloses an apparatus for mounting a plurality of disposable transparent cylinders (test units) in which flow of sample and reagent liquids can be controlled by centrifugal force applied by relatively simple rotating apparatus ... [and] ... Walters discloses a centrifuge apparatus adaptable for use with a rotor of a centrifuge device, which rotates a cylindrical fluid, i.e. blood, tube about a rotational axis which is in substantial alignment with the longitudinal axis of the cylindrical tube while the rotor of the centrifuge device is rotating the cylindrical tube in a centrifuging direction

Cottingham describes a "disposable, self-contained test unit ... for use in ... immunoassay" work. (In Cottingham see, for example, the Abstract and col. 2 at lines 58-62.) A key feature of Cottingham appears to be the ability to centrifuge a plurality of disposable test units/tubes at once, wherein the centrifugation occurs about an axis perpendicular to the long axis of the container tubes. (In Cottingham see, for example, Fig. 2 and col. 6, lines 37-47.) No where does Cottingham teach, describe or fairly suggest either the rotation of a sample container about its longitudinal axis or the simultaneous rotation and interrogation of a sample via a light source.

Walters describes a centrifuge apparatus to rotate a fluid tube about its longitudinal axis in discrete increments and, only when this rotation is stopped, measures a characteristic of the material therein. In Walters see, for example, col. 7, lines 13-64 and FIGS. 3, 4 and 5 (describing the function of the grooves in cam 156 are to discretely rotate the sample vial) and col. 10, line 40 to col. 11, line 67 and FIGS. 9 and 10 (describing the discrete movement of the sample vial "indexing" and the fact that measurements are taken only when the sample vial is stationary with respect to the measurement light).

Independent claims 1 and 10 have been amended to recite that the light source is adapted to illuminate a transparent cylinder "while the transparent cylinder is being rotated by the rotating means" and further that the detector is adapted to detect "while the transparent cylinder is being rotated by the rotating means."

Neither Cottingham or Waters teach, describe or fairly suggest the invention of amended independent claims 1 and 10. For example, Cottingham does not suggest any rotation of a sample vial about its longitudinal axis. In addition, Waters specifically teaches the incremental (discrete) rotation of a sample vial which is further held stationary with respect to the detector. Specifically, Waters teaches (1) centrifuging a sample vial at a first low speed to cause separation of the constituents therein, (2) rotating the sample vial at an increased speed to discretely rotate the sample vial, (3) slowing the sample vial down so that the sample vial is not rotating about its longitudinal axis, and (4) using a detector to measure a characteristic of the material inside the sample vial wherein the sample vial is stationary with respect to the illumination source and detector. (In particular, see col. 10, line 40 to col. 11, line 67 and FIGS. 9 and 10 in Waters.) Each time a sample vial in accordance with Waters is to be rotated, the preceding four steps are repeated. Neither Cottingham or Waters alone or in combination teach or fairly suggest a device or method to illuminate and measure cytometric characteristics from a transparent cylinder while said cylinder is rotating per independent claims 1 and 10. For at least these same reasons, dependent claims 2-4, 11-18, 22, 24-31, 33 and 34 are patentable over the cited prior art.

In light of the above comments and amendments, it is respectfully requested that the Examiner withdraw this rejection and allow the claimed subject matter allowed to pass to allowance.

CONCLUSIONS

Reconsideration of the pending claims 1-4, 10-31, 33 and 34, in light of the above remarks and amendments is respectfully requested. If, after considering this reply, the Examiner believes that a telephone conference would be beneficial towards advancing this case to allowance, the Examiner is strongly encouraged to contact the undersigned attorney at the number listed.

12 DEC 2002
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Claims (amendments shown in mark-up format)

1. (Amended Twice) A cytometer apparatus comprising:

a rotating means adapted to receive and rotate a transparent cylinder along a longitudinal axis of the transparent cylinder;

a light source adapted to illuminate at least a portion of said transparent cylinder while the transparent cylinder is being rotated by the rotating means;

a detector adapted to detect a light signal provided by said light source and reflected from said transparent cylinder while the transparent cylinder is being rotated by the rotating means;

determining means for determining at least one cytometric characteristic of a sample disposed in said transparent cylinder based on said light signal; and

a movement means for moving said transparent cylinder and said light source and detector in a longitudinal axis relative to one another.

10. (Amended Twice) A spin cytometer, comprising:

a rotating means adapted to rotate a transparent cylinder about a longitudinal axis of the transparent cylinder;

a light source adapted to illuminate at least a portion of the transparent cylinder while the transparent cylinder is being rotated by the rotating means;

a detector means for detecting a light signal generated by the light source and reflected from the transparent cylinder while the transparent cylinder is being rotated by the rotating means;

determining means for determining at least one cytometric characteristic of a sample disposed in said transparent cylinder based on said detected light signal; and

a movement means for moving the transparent cylinder and the light source and detector means in relative motion.

19. (Amended) The spin cytometer of claim 18, wherein the organic photoreceptor material is activated by a wave length of approximately 300 nanometers to approximately 800 [100] nanometers.

23. (Amended Twice) The spin cytometer of claim 22, wherein the light emitting diode is adapted to emit a light having a wavelength of between approximately 300 [500] nanometers and 800 [100] nanometers.

26. (Amended Twice) The spin cytometer of claim 10, further comprising an additional one (1) or more light sources, each light source adapted to illuminate at least a portion of the [a] transparent cylinder.

Pending Claims Not Amended Herein

2. The cytometer apparatus as set forth in claim 1, wherein said transparent cylinder comprises a bar code label affixed to an outer wall thereof, said bar code label adapted to be interrogated by said detector means.

3. The cytometer apparatus as set forth in claim 1, wherein said transparent cylinder has an inner wall having calibration standards affixed thereon.

4. The cytometer apparatus as set forth in claim 1, wherein said transparent cylinder comprises an inner wall having a photoactivated crosslinker affixed thereon.

11. The spin cytometer of claim 10, wherein the rotating means is further adapted to sequentially rotate a transparent cylinder in two (2) directions.

12. The spin cytometer of claim 11, wherein the rotating means is adapted to rotate the transparent cylinder between approximately 50 and 3000 revolutions per minute.

13. The spin cytometer of claim 10, wherein the rotating means is adapted to rotate a transparent cylinder comprising:

a closed end;

an open end;

a cell guide member having a first side oriented toward the open end, a second side oriented toward the closed, and a passage from the first side to the second side; and

a cap adapted to seal the open end.

14. The spin cytometer of claim 13, wherein the passage is smaller at said first side than it is at said second side.

15. The spin cytometer of claim 14, wherein the passage is substantially smaller than the diameter of said transparent cylinder.

16. The spin cytometer of claim 13, wherein the closed end has a smaller outside diameter than the open end.

17. The spin cytometer of claim 13, wherein said transparent cylinder comprises a polystyrene cylinder.

18. (Amended) The spin cytometer of claim 13, wherein an inner wall of said transparent cylinder comprises an organic photoreceptor material affixed thereon.

20. The spin cytometer of claim 19, wherein the organic photoreceptor material comprises dibromo anthanthrone.

21. The spin cytometer of claim 10, wherein the rotating means comprises a stepper motor.

22. The spin cytometer of claim 10, wherein the light source comprises a light emitting diode.

24. The spin cytometer of claim 10, wherein the detector means further comprises an analog to digital converter.

25. The spin cytometer of claim 24, wherein the detector means further comprises:
an analog to digital converter; and
a processing means for associating a location identifier with an analog to digital converter output value, the location identifier identifying a location on a surface of the transparent cylinder at which the digital to analog value was obtained.

27. The spin cytometer of claim 26, wherein each of the additional one (1) or more light sources are adapted to emit a different wavelength.

28. The spin cytometer of claim 10, further comprising at least one diffraction grating.

29. The spin cytometer of claim 10, wherein the detector means comprises a photomultiplier.

30. The spin cytometer of claim 10, wherein the detector means comprises a charge coupled device.

31. The spin cytometer of claim 27, further comprising an additional one (1) or more detector means, each detector means responsive to a light signal generated by one of the light sources.

33. The spin cytometer of claim 10, wherein the movement means moves the transparent cylinder in a direction substantially parallel to the transparent cylinder's longitudinal axis.

34. The spin cytometer of claim 10, wherein the movement means moves the light source and detector means in a direction substantially parallel to the transparent cylinder's longitudinal axis.